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March 4, 2010

This report contains my medical opinions regarding the care provided to Mr. Douglas Burk at the Missouri Department of Corrections (MDOC). It is produced at the request of Erin Cobb, Esq.

Materials reviewed
My report is based on the following records:

1. Mr. Burk's medical records from two care providers.

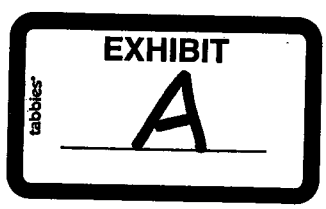
The first care provider is MDOC. The records cover care from approximately 10/20/04 to 12/30/05. The records are in paper format with annotations and highlights which I assumed to be post-hoc and which I therefore ignored. There are approximately 120 pages. The quality of the reproduction is poor with some material illegible. Also, parts of the records appear to be print outs from an electronic health record (EHR), making it difficult to appreciate how the material would have been presented contemporaneously to the actual users of the record. For example, various events recorded in consecutively numbered pages of the printed EHR are often in random date order. Finally, there may be gaps in the record from approximately 11/24/07 to 12/07/04, 05/11/05 to 10/13/05 and 10/27/05 to 11/30/05.

The second care provider is St. Anthony's Medical Center (SAMC). The records cover an emergency room visit on 08/10/03 and an inpatient admission from 08/20/03 to 08/22/08. The records are in paper format with annotations and highlights which I assumed to be post-hoc and which I therefore ignored. There are approximately 110 pages. The quality of the reproduction is adequate, though some handwritten material is illegible.

2. Missouri Division of Professional Registration website as a source of the professional credentials of some of the care providers, accessed 12/08/09.

3. St. Louis Medical Examiner's Report, six pages, contained within a seven page fax.

Overview of Case



Mr. Burk had a history of smoking and cocaine abuse, and on 8/20/03 was admitted to SAMC with a heart attack (acute basal-mid posterolateral myocardial infarction). He was found to have an occluded artery supplying his heart (100%, first obtuse marginal of circumflex) which was successfully treated by opening the occlusion with a balloon and inserting a tube to keep the artery open (stent). His heart was pumping at below normal efficiency (45-50% left ventricular ejection fraction on echocardiogram on 08/21/03). I do not know what further care he had after discharge.

He was admitted to the "ERDCC" institution of the MDOC on or about 10/20/04. He was transferred to MECC on 12/07/04 and had some subsequent intra-system transfers. He had a number of encounters with medical staff. Most of the encounters appear to be with nursing staff. The staff noted that he had a history of a heart attack (MI) and stent placement. Some cardiac medications were provided during his stay. As mentioned earlier, there were two gaps in the MDOC record; the content of the record, including unexplained changes in medications at these junctures, suggests to me that Mr. Burk was transferred out of ERDCC during these gaps. There were some significant problems with Mr. Burk's chronic cardiac care during the 14 months at MDOC. The most significant of these included failure to adequately assess his cardiac condition upon arrival at the jail, failure to provide the correct medications for his heart, and failure to address an elevated blood sugar (which may have meant he had diabetes or pre-diabetes [impaired glucose tolerance], and which, untreated, would increase his risk of further heart problems).

This case is also significant for the care Mr. Burk received for an acute problem. On the evening of 12/29/05 Mr. Burk complained of problems breathing. He was evaluated by an license practical nurse (LPN) and sent back to his house with an assessment of "no acute distress noted." A few hours later the same nurse received a call from an officer reporting that Mr. Burk was throwing up. The nurse did not see him in the medical unit. At 04:45 the following morning Mr. Burk was found pulseless. CPR was initiated. I assume that the patient did not survive this cardiac arrest. There is no autopsy report.

Evaluation of specific elements of the case

Cardiac

1. Mr. Burk's intake evaluation on 10/20/04 was inadequate.

First, the only cardiac history obtained appears to have been obtained by a nurse and was limited to pre-printed questions inquiring whether the patient had a variety of symptoms. This line of question was necessary but insufficient because patients may be symptom-free if they are sedentary. Even worse, they may be avoiding activity because they know it will cause problems. So, in a high risk patient such as Mr. Burk, it was incumbent on medical staff to dig deeper and ask not only what his symptoms were, but ask what his activity level was, if he was not active, ask why he was not more active, and specifically ask about symptoms with activity, heavy meals, when supine, etc.

Second, the record does not show the credentials of the nurse. Not only is this a basic element of good medicolegal record keeping, but it has potential patient care impact.

Subsequent users of a medical record interpret reports based, in part, on the credentials of the reporter.

Third, Mr. Burk reported that he was still smoking. Given that he had a cardiac condition, he should have been counseled on tobacco cessation.

Fourth, as part of his cardiac history, staff indicated that he had "LVH C EJ FRX 35-40%." I interpret this to mean that Mr. Burk had thickening of the wall of his heart (left ventricular hypertrophy) and that his heart was beating with 35-40% efficiency. In fact, this is not consistent with the reports from SAMC which were in the chart. I do not find anywhere in the report that Mr. Burk's heart wall was thickened. I believe that the description of his left ventricle as being enlarged was assumed to be a thickened wall; it could have been, and was more likely, that the heart chamber cavity itself was enlarged. With regard to the heart's efficiency, there is a SAMC report of a 35-40% efficiency. However, this was on the catheterization report, performed during the acute phases of Mr. Burk's heart attack. The discharge summary from SAMC (available in Mr. Burk's MDOC chart at the time) actually reported that the efficiency was 40-45%. [1] This error reveals that medical staff did not review the few pages of records from SAMC carefully. 40% is an important cutoff for guiding certain treatments, so the error is not insignificant.

Fifth, the SAMC records available to the MDOC staff indicated that Mr. Burk was discharged from SAMC on lisinopril, plavix, aspirin, and nitroglycerine. The only medication they noted in the intake evaluation was plavix.[2] Failure of the physician to note and restart these other medications (including the aspirin) put Mr. Burk at increased risk of another heart attack.

Sixth, conversely, the only medication which Dr. Chastain did order was the plavix. This medication should not have been given for more than 12 months post hospital discharge, i.e. no longer than 08/22/04. Prescribing this medication for Mr. Burk beyond this point put Mr. Burk's health in jeopardy since the risks of the medication outweighed the benefits.

Seventh, the SAMC records also indicated that Mr. Burk was to have a stress test two to three weeks post hospital discharge. That stress test would be important for planning further cardiac care. Staff failed to make inquiries (either of Mr. Burk or through his records) of whether or not that test took place, and if so, what the results were. This failure may have put Mr. Burk at increased risk of another heart attack.

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[1] Based on the complete SAMC records I reviewed, the efficiency of 40-45% was based on a different test (echocardiogram) done later during Mr. Burk's SAMC hospitalization when his heart was recovering. It is therefore the more accurate and useful result, which is why it is the result that SAMC physician's reported in their discharge summary report.

[2] There was another evaluation performed by a nurse on the same date, 10/20/04, at 11:00 AM. Since the Intake Evaluation is not time stamped, it is impossible to know which was done first. In either case, the nurse working at 11:00 AM did note that Mr. Burk was on aspirin.

2. Mr. Burk's treatment for his cardiac condition should have included a medication in the class of medications called beta blockers. These medications reduce the chance of another heart attack. It's not clear why Mr. Burk was not discharged on this medication from the hospital, but the doctors at MDOC should have either started it, or at least sought input from the doctors at SAMC (or another cardiologist) about why it should not be started. Failure to prescribe such a medication put Mr. Burk at increased risk of another heart attack.

3. Mr. Burk was transferred to "MECC" institution on 12/07/04. During the initial visit here, the physician failed to ask Mr. Burk any questions about potential cardiac-related symptoms, such as chest pain, shortness of breath, etc. These are basic and important historical questions to ask of a patient with Mr. Burk's history. Most of the other failures I described with the initial evaluation at ERDCC were perpetuated by this physician's evaluation, including failure to place Mr. Burk on the correct array of medications for his heart problem.

4. A physician ordered laboratory tests which were obtained on 01/03/05 and reported back to the facility on 01/04/05. There is no record that the physician ever reviewed these results. There were significantly abnormal results which required the physician's attention.

First, and most important, the patient's fasting blood glucose was 121 which is above normal. Though not quite in the diabetic range (over 125), it was in a worrisome range. The physician failed to note this increase or take any action. Failure to do so put Mr. Burk at increased risk of developing diabetes, which, in turn, would have put him at increased risk of many problems, including worsening of his heart condition.

Second, Mr. Burk's "good" cholesterol (HDL) was low (29). Low levels of HDL are a risk factor for another heart attack. The physician failed to note this low level. However, I find this a less significant event because the physician did add a cholesterol-related medication (niacin) on 01/13/05. Mr. Burk also received tobacco cessation counseling and a prescription for aspirin – for the first time I can find – on this date.

5. Some time between 01/04 and 03/04 orders for plavix seem to have ceased to be written. I was unable to find an order stopping it or a reason why. Though it is good that it was stopped, failure to write an order and provide a reason reflects poor record keeping at best. At worst, the medication was forgotten.

6. Mr. Burk had an intake physical examination at "FCC" on 10/14/05. As with previous intake examinations, once again the physician failed to take an adequate history regarding possible cardiac-related symptoms. The physician's physical examination failed to assess Mr. Burk for such cardiac-related signs as extra heart sounds (S3 and S4)[3] or swelling of the legs (edema). Tobacco abuse was again noted, but there was no plan to address it.

7. Mr. Burk had a chronic care clinic visit on 12/19/05. Once again, the quality of the history elicited from him by the physician, Dr. Bowles, was insufficient. The physician asked Mr. Burk a few questions about current cardiac-related symptoms, but failed to ascertain his activity level and whether Mr. Burk had any symptoms at times of higher cardiac work, such as sports, climbing stairs, stress, etc. During his examination, he failed to assess Mr. Burk for extra heart sounds (S3 and S4). These are important elements of a physical exam in a patient with Mr. Burk's history as they may be early signs of worsening of his heart condition.

8. On 12/29/05 at 10:30 PM Mr. Burk complained of having had a hot flash and difficulty breathing. He was evaluated by an LPN. According to the nurse's contemporaneous charting, she checked his blood pressure (140/84), pulse (76), respiratory rate (22), and blood sugar (149). She wrote "SHIN PALE WAND D" which I interpret as meaning his skin was pale and dry. She reported his breathing was non-labored. The only additional evaluation she performed was listening to his lungs which she reported as clear. The nurse concluded that he had "no acute distress" and instructed Mr. Burk to "call or self-declare" if problems continued.

In a post-incident report which the nurse wrote two weeks later on 01/13/06, the nurse provided additional information about the 12/29/05 10:00 PM encounter, including: Mr. Burk appeared anxious; he had perspiration over his brows; his back, left arm, and hand were dry; he denied being diabetic; he denied being on cardiac medications; he calmed down.

In this post-incident report, the nurse described an additional encounter with Mr. Burk for which I was unable to find any contemporaneous charting in the medical record. She reported:

> *A few hrs. later* [after the 10:00 PM incident] *the CO called me back and said he was throwing up, could I give him something. It told the CO he had to come to medical to be evaluated, to receive* [sic] *any medication and I also told the CO if everything check* [sic] *out he probably wouldn't get any thing* [sic], *the inmate would not come to medical. My feeling @ the time was I thought he was having a* [sic] *anxiety attack, may be [sic] even getting a virus.*

At 4:45 AM the following morning Mr. Burk was found without a pulse. CPR was started. I assume he died after this event.

These events reflect multiple serious deviations from good medical practice which, in my opinion had major contributions to Mr. Burk's death.

First, Mr. Burk's evaluation at 10:00 was wholly inadequate, both in terms of the who did it and what was done. Given Mr. Burk's history of a heart attack, his complaint of

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[3] S3 and S4 (also called a cardiac gallop sound) are heart sounds which are not ordinarily heard in health adults. Their presence, especially in someone with a history of a heart attack can be an important sign that the patient's condition is worsening.

sudden onset shortness of breath, the fact that this was a new (not chronic) complaint, and the presence of anxiety and perspiration, all dictated that his evaluation should have included a practitioner (i.e. nurse practitioner, physician assistant, or physician); this situation was outside the scope of capabilities of an LPN. The evaluation itself was grossly lacking. Mr. Burk's oxygen level in his blood should have been measured (this is simple, quick and painless to do). Mr. Burk's heart should have been listened to with a stethoscope. Mr. Burk's legs should have been checked for swelling (edema). His neck veins should have been checked for increased pressure. An EKG should have been done.[4] Based on this more complete evaluation, additional testing may have been indicated.

Second, the nurse failed to appreciate that Mr. Burk had a cardiac history. Admittedly, when she asked him if he were on any cardiac medications he (erroneously) replied no. However, it was incumbent on the medical professional tending to Mr. Burk to know his pertinent medical information. The fact that he had had a heart attack and had stents placed in his heart blood vessels was evident on his problem list and in numerous other prominent places in his chart. With regard to medications, the nurse had only to look at the nursing Medication Administration Record (or any number of other places) to see that Mr. Burk was on two cardiac medications. If she had appreciated this history, she might have had a higher index of suspicion and acted differently.

Third, the nurse's reaction to the call from the officer was unacceptable and even contradicted her own previous instructions. Indeed, she had told Mr. Burk to recontact medical staff if there were further problems, and when he did, she did nothing. An officer is not qualified to collect all the clinical information the nurse would have needed to make an assessment, nor is he/she qualified to transmit clinical information back to the patient from the nurse. Given Mr. Burk's history of a heart attack and his shortness of breath, anxiety, and perspiration earlier in the evening, his new symptoms of vomiting were highly suggestive of possible acute heart troubles and demanded he be evaluated by a medical professional immediately. The nurse's actions at that moment not only reflect lack of adequate knowledge, but her actions and her tone in her description suggest to me a lack of willingness to expend effort and a lack of caring.

Non-Cardiac

1. There is a page in the record that shows that Mr. Burk refused a vaccine (marked page 0054). This page is inadequate for a variety of reasons. First, there is no date. Second, there is no name of a counseling professional. Third, there is no indication of what exactly the patient was refusing. Fourth, there is no indication that the risks of refusing (whatever it was that was being offered) were explained.

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[4] These various evaluations are specific for important physiologic signs which sometimes accompany an acutely ailing heart. For example, if the heart is not getting enough oxygen and cannot pump well, fluid may collect in the lungs, impairing the lung's ability to exchange oxygen for carbon dioxide, causing the blood oxygen level to fall. Fluid may also collect in the legs, leading to swelling. The failure of the heart's pumping action is mediated by increased back up of blood waiting to get to the heart which can be detected by swelling of the neck veins leading to the heart.

2. Electronic signatures in the EHR are not accompanied by professional degrees. This is especially problematic for the designation "nurse" which could mean LPN, RN, ARNP, or CNA, each of which has very different implications in terms of patient care.

3. Verbal orders were never countersigned. A verbal order is an oral order given by a prescriber to a nurse. Good practice requires that the prescriber read and countersign the order within a day or so (depending on the jurisdiction) to assure that it was heard and transcribed correctly. Failure to do so is a very poor practice and puts patients at danger.

4. On approximately 10/14/05 (the date is very difficult to read; page 0048), an intake health screening was performed. The only data filled in, besides demographics, were the patient's vital signs. The other 36 elements of the screening were not performed and are blank. This evaluation occurred at the end of one of the gaps I described above. Since I don't know where the patient was being housed up to that point, it is difficult to provide an opinion on the degree to which failure to address these 36 elements placed Mr. Burk at risk. At the very least, it is never good medical care to leave a required form blank with no explanation of why.

5. On 10/20/05 Dr. Chastain ordered a "baseline" chest x-ray. I can discern no reason for this order especially in light of Mr. Burk's absence of symptoms and a long history of negative skin tests for tuberculosis. Baseline chest x-rays are no longer medically indicated as screening tools. Mr. Burk was therefore exposed to an unnecessary – albeit small – risk of cancer. He was also exposed to the risk of a false positive result. This means that sometimes tests reveal an ostensibly abnormal finding. The abnormal finding leads to further testing which eventually demonstrates that the original finding was not serious. However, sometimes the further testing itself causes harm to the patient. (No such harm was caused to Mr. Burk.)

6. On 11/27/05 Mr. Burk submitted a Medical Services Request (MSR). His complaint seems to relate to his knee and back. The only notation in the "Triage Nurse" section of the MSR form is "Tylenol 325 mg #24." In the "Nursing Visit" section of the form, an "X" was drawn astride two different action boxes ("Documentation in computerized medical record" and "Protocol Completed") and it was signed by an LPN on 12/05/05 (no time is indicated). This MSR interaction demonstrates a number of serious flaws in care to Mr. Burk.

First, I have no idea what the "Tylenol" notation in the "Triage Nurse" section means. Was Mr. Burk actually seen by a medical professional? Was an evaluation and assessment made? What was the result? Who wrote "Tylenol?" Was this a medication given to Mr. Burk? Was he given any instructions about what to do next, e.g. if his symptoms continued or worsened?

Second, if the above "Tylenol" notation does not represent a patient triage, then Mr. Burk's complaint was not evaluated by a qualified medical professional until 12/05/05,

eight days after he submitted it. This is unacceptable practice. His complaint should have been evaluated much sooner.

Third, the documentation of the LPN on 12/05/05 is sloppy; I am unable to tell which of the two above-mentioned action boxes are checked.

Fourth, I was able to find a nurse encounter in the record (apparently from the EHR) dated 12/05/05. While the encounter seems to include pre-determined questions, the record does not appear to indicate that the nurse was operating under any protocol or algorithm per se. In other words, the presence of a protocol or algorithm implies that depending on the findings, the evaluator is forced to, or guided to make certain choices for further evaluation or treatment. During this visit, it appears that all evaluation and treatment choices made by the LPN were based on her own judgment. In my opinion, such care by an LPN is well beyond what an LPN can safely do independently, especially in light of Mr. Burk's symptoms of "pain radiation down leg/below knee," "peripheral numbness," "difficulty walking," "neurovascular deficit," and "loss of bowel or bladder control," all of which are indicators of potentially serious problems. This entire encounter put Mr. Burk at significant risk for harm.

7. On 12/14/05 Mr. Burk presented to an RN while she was passing medications, complaining of a draining boil. The nurse's evaluation and assessment were inadequate, failing to investigate whether there were any signs or symptoms of serious infection, such as fever, pain, spread of infection, etc. Twenty eight hours later Mr. Burk was seen by another RN in follow up. This was an unnecessary delay which put the patient's health at risk; in my opinion the proper evaluation should have completed on 12/14/05 at that time the patient approached the first nurse (or immediately after medication pass), not the next day. The second nurse failed to document the location or size of the boil, so it is impossible to know if this was the same boil that was present the previous day or a new one. Dr. Cox gave the nurse a verbal order for an antibiotic called Keflex. In my opinion, this care was deficient in two ways. First, if the boil were indeed small, with no evidence of spread, in a patient (such as Mr. Burk) with an intact immune system, already draining, and able to be watched closely (as can be done in jail), antibiotics were not necessary. Unnecessary use of antibiotic put Mr. Burk at risk for the all the side effects of the medication as well as increased risk of developing a germ resistant to the antibiotic. Second, given the boil Mr. Burk had (including his description of it as a "spider bite") and that he was in a jail setting, staff should have strongly considered that his infection might have been caused by methicillin resistant staphylococcus aureus (MRSA). MRSA is resistant to Keflex. Thus, if antibiotics were going to be used, in my opinion, the wrong antibiotic was ordered, again placing Mr. Burk at risk.

Conclusions

Mr. Burk was cared for at various MDOC facilities over a 14 month period. The care he received can be divided into two parts: the general care he received for cardiac and other problems over the course of the 14 months prior to the evening of 12/29/05, and the care he received for an acute problem beginning the evening of 12/29/05.

With regard to the first part, in my opinion, the care Mr. Burk received for his cardiac condition (and other problems) fell below the minimally acceptable standard of care I would have expected for this patient in this situation. Such deficiencies included unclear record keeping, inadequate review of past records and history, too much care by less-trained rather than more-trained medical staff, misprescribing of medications, inadequate assessments of current cardiac status by history (symptoms) or examination, failure to identify and address possible early diabetes, unnecessary testing, inappropriate evaluation and treatment of a skin infection, and delays in care. Many of these deficiencies were recurring, not one-time, events. Some of these deficiencies, especially failure to place Mr. Burk on a beta blocker medication and failure to aggressively treat his tobacco addiction increased his risk of another heart attack and therefore contributed to his death.

With regard to the second part, the care Mr. Burk received for his complaint of shortness of breath and then later, vomiting, was grossly inadequate. It reflects deliberate indifference on the part of medical staff to a serious medical need. It is possible that even with state-of-the-art care including such things as emergency medications, ambulance transportation, and hospital treatment, the outcome may not have changed. However, the actions or inactions of medical staff greatly increased the likelihood that his condition would worsen and thus contributed to Mr. Burk's death.

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